

लोक सेवा आयोग
नेपाल स्वास्थ्य सेवा, विविध समूह, सहायक पाँचौं तह, बायोमेडिकल टेक्निसियन पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छ :

प्रथम चरण :-	लिखित परीक्षा	पूर्णाङ्क :- १००
द्वितीय चरण :-	अन्तर्वार्ता	पूर्णाङ्क :- २०

प्रथम चरण – लिखित परीक्षा योजना (Written Examination Scheme)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या X अङ्कभार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगत बहुवैकल्पिक (Multiple Choice)	५० प्रश्न X २अङ्क = १००	४५ मिनेट

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
२. लिखित परीक्षामा यथासम्भव निम्नानुसार प्रश्नहरू सोधिनेछ ।

Unit	Types of Questions (No. of Questions)			
	Basic	Application	Laboratory Skills	Total
1. Human Physiology and Biomedical Instrumentation	6	10	6	22
2. Biomedical Chemistry	2	3	-	5
3. Electronic Principles and Practices	3	6	3	12
4. Digital Electronics & Microprocessors	1	3	1	5
5. Computer Skills	2	-	-	2
6. Record keeping and Technical Writing	1	-	-	1
7. Patient and Hospital Environment	1	-	-	1
8. Maintenance and Repair for Biomedical Devices	-	-	2	2
Total	16	22	12	50

३. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
४. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
५. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।
६. पाठ्यक्रम लागू मिति :- २०७२/०४/२८ गते देखि

लोक सेवा आयोग
नेपाल स्वास्थ्य सेवा, विविध समूह, सहायक पाँचौं तह, बायोमेडिकल टेक्निसियन पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पत्र/विषय :- सेवा सम्बन्धी

1. Human Physiology and Biomedical Instrumentation

- 1.1 Introduction to Basic Physiology : nervous system, respiratory system, circulatory system, digestive system and excretory system
- 1.2 Physiological Signals Monitoring : ECG, EMG, EEG, Pulse Oxymeter, Temperature Meter and Blood Pressure Meter
- 1.3 Labour and Delivery : foetal heart monitoring, infant warmer and phototherapy
- 1.4 Dental Clinic and Laboratory : suction pressure unit, suction machine and dental chair
- 1.5 Physical Therapy : Diathermy, Hydrotherapy, Traction & TMT unit
- 1.6 ENT : Audiometers, Tympanometers, ENT icroscope, ENT Drill and Autoscope
- 1.7 Imaging Systems
 - 1.7.1 X-ray: introduction and working principle
 - 1.7.2 General introduction to MRI and CT
- 1.8 Hospital Gas Supply
 - 1.8.1 Medical Gas: introduction and classification
 - 1.8.2 Oxygen Concentrator: introduction and working
- 1.9 Dialysis: General introduction and working principle
- 1.10 Basic Laboratory Equipments: introduction and working principle (water bath, hot air oven and autoclave)
- 1.11 OT Light

2. Biomedical Chemistry

- 2.1 Electrochemistry
 - 2.1.1 Introduction and range of electrochemical techniques
 - 2.1.2 Classification of electrochemical techniques: Potometry and Voltmetry
- 2.2 Organic Chemistry : introduction, classification and general uses of organic compounds
- 2.3 Carbohydrates, Proteins and Lipids : definition, classification and properties
- 2.4 Instrumental methods for analysis of biologically important substance : Electrophoresis, Chromatographic, Mass spectrometric, Centrifugation, Filtration and Colorimetric techniques
- 2.5 Acid-Base Chemistry
 - 2.5.1 pH, buffer and buffer systems
 - 2.5.2 Electrolysis and water dissociation

3. Electronic Principles and Practices

- 3.1 Circuit Parameters: introduction
- 3.2 AC and DC circuits: introduction and analysis
- 3.3 Transistors: introduction and classification (BJT, JFET, MOSFET)
- 3.4 Power Supplies, Voltage Regulators and IC Regulators
 - 3.4.1 Introduction and characteristics
 - 3.4.2 Rectifiers, filters, voltage regulation and switching regulation
- 3.5 Amplifiers
 - 3.5.1 Introduction, characteristics, ideal amplifier and differential amplifier

- 3.5.2 Operational Amplifier: introduction, characteristics and application
- 3.6 OptoElectronic Components
 - 3.6.1 General introduction
 - 3.6.2 Photoconductive cells, Photodiodes, Phototransistors, Solar cells, Light activated SCR, Light Emitted Diodes (LEDs), Optocouplers and Liquid Crystal Displays (LCD)
- 4. Digital Electronics and Microprocessors**
 - 4.1 Fundamental of Digital Electronics
 - 4.1.1 Transistor: application as switch and relay
 - 4.1.2 Logic Gates: truth tables and Boolean expressions
 - 4.1.3 Universal gates and gate conversion
 - 4.1.4 DeMorgan's theorem
 - 4.2 Combinational Logic Devices
 - 4.2.1 Encoder and Decoder
 - 4.2.2 Multiplexer and Demultiplexer
 - 4.2.3 Half and Full: Adder and Subtractor
 - 4.3 Sequential Logic Devices
 - 4.3.1 Counters: types and characteristics
 - 4.3.2 Registers: SISO, SIPO, PISO, PIPO
 - 4.3.3 Digital clocks and frequency counter
 - 4.4 Introduction and characteristics of analog to digital or digital to analog conversion
 - 4.5 Fundamentals of microprocessor, introduction and architecture of 8085 microprocessor
- 5. Computer Skills**
 - 5.1 Introduction to computer
 - 5.2 Input, output and memory devices
 - 5.3 Internet and information resources
 - 5.4 Networking concepts
- 6. Record keeping and Technical Writing**
 - 6.1 Introduction to record keeping and technical writing
 - 6.2 Creating forms, memos, letters and daily reports
 - 6.3 Computerized inventory and maintenance report
- 7. Patient and Hospital Environment**
 - 7.1 Procurement procedures
 - 7.2 Biomedical waste management
- 8. Maintenance and Repair for Biomedical Devices**
 - 8.1 Working Tools and Testing Equipments: General Handling Tools, Oscilloscopes and Multimeters
 - 8.2 Electrical Safety Inspections
 - 8.3 General Equipment Maintenance : Blood pressure machine, Suction machine, Stethoscope Syringe and Infusion pump

---- End---

Sample Questions

1. The resonant frequency of LC circuit is
A) $\frac{1}{\pi L \sqrt{C}}$ B) $\frac{1}{\pi \sqrt{LC}}$
C) $\frac{1}{2\pi \sqrt{LC}}$ D) $\frac{\pi}{2\sqrt{LC}}$
2. Which of the following has the highest attenuation of ultrasound?
A) Blood B) Bone
C) Fat D) Muscle
3. is also known as the natural pacemaker of the heart.
A) AV node B) Bundle of His
C) Purkinje fibres D) SA node
4. Wi-Fi stands for
A) Wireless Fidelity B) Wired Function
C) Wireless Function D) None of these
5. A multiplexer has
A) Many input lines and one output line
B) One input line and many output lines
C) Equal number of input and output lines
D) None of these
6. A bed side patient monitor does not give information about the
A) Temperature B) Blood Pressure
C) Respiration rate D) Blood glucose level
7. Brushes in DC motor are made up of
A) Copper B) Iron
C) Carbon D) Graphite
8. The unwanted (scattered X-rays) are stopped from reaching the patient by
A) X-Ray tube B) Buckey
C) Collimator D) Lead Jacket